11.3 Summarizing Datasets

Part 1 – Summary Statistics

In this section, you learned a variety of ways to describe and analyze a data set. In this activity, we will explore different measures of center as related to grades in a class.

Suppose two friends are taking the same course but are in two different sections, which hada different number of graded assignments and exams. The friends want to compare their overall grades. The grades of the two students are as follows.

Student A: 78, 89, 95, 64, 98, 0, 87, 84, 76, 93, 89, 77, 61

Student B: 87, 79, 88, 91, 89, 77, 86, 93, 105, 89

1. For each data set, determine the mean, median, mode, range, and standard deviation. Round values to the nearest hundredth, if necessary.

Comparison of Students' Grades		
	Student A	**Student B**
Mean		
Median		
Mode		
Range		
Standard Deviation		

2. Compare the two students' grades. Which value(s) did you use in your comparison? Explain why you picked those values.

3. Determine whether there are any outliers in each student's grades. Remove each outlierfrom the data sets. Explain why each data point you removed is an outlier.

4. For each modified data set, determine the mean, median, mode, range, and standard deviation. Round values to the nearest hundredth, if necessary.

Comparison of Students' Grades with Outliers Removed		
	Student A	**Student B**
Mean		
Median		
Mode		
Range		
Standard Deviation		

5. Do these new values change your mind of which student performed better in the course? Explain why or why not.

6. Do you think outliers should be removed when comparing grades between students? Explain your reasoning.

Part 2 – Boxplots

Suppose a new species of lizards has been found and you are tasked with measuring their length to get a good estimate of the distribution of lizard lengths. Use the following datasets of lizard lengths (cm) for males and females to answer each question.

Males	39	31	32	25	2	29	38	47	46	6	
Females	65	41	15	44	59	23	18	17	68	13	36

1. Calculate the 5-number summary for each type of lizard

Males

Min =
Q_1 =
Med =
Q_3 =
Max =

Females

Min =
Q_1 =
Med =
Q_3 =
Max =

2. Draw boxplots for each type of lizard.

Males:

Females:

3. Which type of lizard has more variation (i.e. a wider spread) in terms of their lengths? How do you know?